CLAIMS

What is claimed is:

1. A method for selecting one of a plurality of radioport architectures of radioports in a wireless communication network, said method comprising:

specifying parameters associated with said radioports;

computing composite powers for said radioport architectures in response to said parameters;

determining cost structures responsive to said composite powers for said radioport architectures; and

comparing said cost structures of said radioport architectures to select said one radioport architecture.

2. A method as claimed in claim 1 wherein said comparing operation includes choosing a least-cost one of said radioport architectures to be said one radioport architecture.

3. A method as claimed in claim 1 further comprising identifying a cost-optimal coverage area for said radioports in response to said comparing operation.

4. A method as claimed in claim 1 further comprising identifying, in response to said comparing operation, a cost-optimal quantity of radioports to support wireless communication in a total service area of said wireless communication network.

5. A method as claimed in claim 1 wherein said specifying operation specifies a constant channel capacity constraint, and said cost structures are determined in response to said constant channel capacity constraint.

6. A method as claimed in claim 5 wherein said computing operation comprises:

defining a number of transmission channels allocated to each of said radioports, said number being associated with said constant channel capacity constraint;

varying channel transmission powers for said transmission channels; and

calculating said composite powers in response to said number of transmission channels and said varying channel transmission powers.

7. A method as claimed in claim 6 further comprising:

defining coverage areas of said radioports to be circular regions of common radii; and

utilizing a propagation model to identify sizes of coverage areas, said sizes varying in response to said varying channel transmission powers.

8. A method as claimed in claim 1 wherein said specifying operation specifies a constant offered load constraint, and said cost structures are determined in response to said constant offered load constraint.

9. A method as claimed in claim 8 wherein said computing operation comprises:

(a) identifying sizes of coverage areas of said radioports;

(b) determining channel transmission powers for each of said sizes of said coverage areas;

(c) computing offered load values for said each of said sizes of said coverage areas in response to said constant offered load constraint; and

(d) determining a number of said transmission channels to support said each of said offered load values, said composite powers being computed in response to said number of transmission channels and said channel transmission powers.

10. A method as claimed in claim 9 wherein:

said method further comprises defining said coverage areas to be circular regions of common radii;

said specifying operation provides said radii; and

said operation (a) computes said coverage areas in response to said provided radii.

11. A method as claimed in claim 9 wherein:

said specifying operation provides a quality of service parameter; and

said operation (d) comprises approximating said number of transmission channels at each of said offered load values in response to said quality of service parameter.

12. A method as claimed in claim 11 wherein said quality of service parameter is a blocking probability.

13. A method as claimed in claim 1 wherein:

said method further comprises:

identifying sizes of coverage areas of said radioports, said coverage areas for each of said radioports being circular regions of common radii; and

ascertaining a quantity of radioports to support wireless communication in a total service area of said wireless communication network; and

said determining operation comprises:

applying a cost model to determine costs of one of said radioports responsive to said sizes of said coverage areas; and

combining each of said costs with said quantity of said radioports to obtain said cost structures of each of said radioport architectures.

14. A computer-readable storage medium containing executable code for instructing a processor to select one of a plurality of radioport architectures of radioports in a wireless communication network, said executable code instructing said processor to perform operations comprising:

specifying parameters associated with said radioports, said specifying operation specifying a constant channel capacity constraint;

computing composite powers for said radioport architectures in response to said parameters;

determining cost structures responsive to said composite powers for said radioport architectures, said cost structures

being determined in response to said constant channel capacity constraint; and

comparing said cost structures of said radioport architectures to choose a least-cost one of said radioport architectures to be said one radioport architecture.

15. A computer-readable storage medium as claimed in claim 14 wherein said executable code instructs said processor to perform further operations comprising:

defining a number of transmission channels allocated to each of said radioports, said number being associated with said constant channel capacity constraint;

varying channel transmission powers for said transmission channels;

calculating said composite powers in response to said number of transmission channels and said varying channel transmission powers.

16. A computer-readable storage medium as claimed in claim 15 wherein said executable code instructs said processor to perform further operations comprising:

utilizing a propagation model to identify sizes of coverage areas of said radioports, said coverage areas for each of said radioports being circular regions of common radii, and said sizes of said coverage areas varying in response to said varying channel transmission powers;

for each of said sizes, ascertaining a quantity of radioports to support wireless communication in a total service area of said wireless communication network;

applying a cost model to determine costs of one of said radioports responsive to said sizes of said coverage areas; and

combining each of said costs with said quantity of said radioports to obtain said cost structures of each of said radioport architectures.

17. A computer-based method for selecting one of a plurality of radioport architectures of radioports in a wireless communication network, said method comprising:

specifying parameters associated with said radioports, said specifying operation specifying a constant offered load constraint;

identifying sizes of coverage areas of said radioports;

ascertaining a quantity of radioports to support wireless communication in a total service area of said wireless communication network in response to said sizes of said coverage areas;

computing composite powers for said radioport architectures in response to said parameters;

determining cost structures responsive to said composite powers for said radioport architectures, said cost structures being determined in response to said constant offered load constraint, said determining operation including:

applying a cost model to determine costs of one of said radioports responsive to said sizes of said coverage areas; and

combining each of said costs with said quantity of said radioports to obtain said cost structures of each of said radioport architectures; and

comparing said cost structures of said radioport architectures to choose a least-cost one of said radioport architectures to be said one radioport architecture.

18. A computer-based method as claimed in claim 17 wherein:

said method further comprises defining said coverage areas to be circular regions of common radii;

said specifying operation provides said radii; and

said identifying operation computes said sizes of said coverage areas in response to said provided radii.

19. A computer-based method as claimed in claim 17 wherein said computing operation comprises:

(a) determining channel transmission powers for each of said sizes of said coverage areas;

(b) computing offered load values for said each of said sizes of said coverage areas in response to said constant offered load constraint;

(c) for said each offered load value, determining a number of said transmission channels to support said each offered load value, said composite powers being computed in response to said number of transmission channels and said channel transmission powers.

20. A computer-based method as claimed in claim 19 wherein:

said specifying operation provides a blocking probability parameter; and

said operation (c) comprises approximating said number of transmission channels at each of said offered load values in response to said blocking probability parameter.